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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,771	01/10/2002	Peter I. Majewicz	D/A1294;690_010500_US(PAR	8318

7590 01/12/2004  
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EXAMINER

COLILLA, DANIEL JAMES

ART UNIT	PAPER NUMBER
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2854

DATE MAILED: 01/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/044,771

Applicant(s)

MAJEWICZ ET AL.

Examiner

Dan Colilla

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MW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 January 2002 and 31 Decmeber 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-6 is/are allowed.
- 6) ☒ Claim(s) 7-12 and 14-20 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

1. Figure s 1-2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

2. The disclosure is objected to because of the following informalities:

Figure 1 is not a perspective view as stated on page 5, line 20 of the specification.

There is no reference numeral 10 in Figure 1 as mentioned on page 5, line 21 of the specification.

There is no reference numeral 20 in Figure 2 as mentioned on page 6, line 24 of the specification.

Appropriate correction is required.

### ***Claim Objections***

3. Claims 6, 8, 11 and 17-20 are objected to because of the following informalities:

In claim 6, there is some irregular punctuation at the end of the claim.

In claim 8, line 2, it appears that "in" should actually be --is--.

In claim 11, "the end LED" has no proper antecedent basis in the claims. In parent claim 7, applicant recites, "an LED at each end of the chip." Thus there are a plurality of LED's on

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each chip and there are a plurality of chips as previously recited in the claim. Furthermore, it appears from applicant's drawings and disclosure that some of these LED's produce a light centroid that is left of the center of the light emitting portion of the LED, but applicant only recites a centroid to the right of center.

Additionally, in claim 11, applicant recites, "the end LED produces a light centroid that is right of center." Applicant does not, however, recite of what the centroid is to the right of. It appears that applicant intends to recite to the right of the center of a light emitting portion of the LED.

In claim 17, line 5, it appears that applicant has left out some language in this line. Applicant recites, "wherein each end LED of each LED chip is inward biased." However, this is not supported by the specification and does not appear to be applicant's intended language considering the rest of the claims. It appears that applicant has actually intended to recite language such as, --wherein an electrode of an LED at each end of each LED chip is inward biased--.

Also in claim 17, in line 11, it appears that "expension" should actually be --expansion--, and it appears that "ED" should actually be --LED--.

Appropriate correction is required.

4. Claim 13 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

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Claim 13 does not further limit the parent claim 12, instead it improperly modifies the parent claim. In claim 12 chips are recited as being placed end to end. While no size is explicitly recited in claim 12 they are assumed to have some given size. In claim 13, however, applicant recites that the chips are reduced in size by a predetermined amount. Clearly the chip cannot be both the original given size and the reduced size. Therefore, the claim 13 improperly modifies claim 12.

*Prior art could not be applied to claim 13 since the claim improperly modifies rather than further limiting the parent claim.*

*Please note that claim 17 is being interpreted as having the meaning pointed out in the above objection to the claims.*

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 17 is rejected under 35 U.S.C. 102(b) as being anticipated by Matsushita.

Matsushita discloses an LED array including two chips 1 placed adjacent to each other with each chip 1 including a plurality of LED's 2. Each end LED 2a and 2b has an electrode 3a and 3b, respectively, that is inward biased toward the center of the chip 1 from the center of the LED 2 thus forming a light center or centroid closer to the edge of the chip (see paragraph

[0014], lines 10-12 of the machine translation and Figure 2b of Matsushita). Viewing Figures 1 and 2b of Matsushita and noting the centroid position of Figure 2b it can be seen that the pitch of the pixels is constant.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushita in view of Kahen et al.

With respect to claim 7, Matsushita discloses the claimed structure except for the wire bond pads and the specific pitch of approximately 21.2  $\mu\text{m}$ . Matsushita discloses a plurality of LED chips 1 butted together with a gap between adjacent LED's 2 to form an array as shown in Figure 1 of Matsushita. Also disclosed are center electrodes 3 extending from each LED 2. Matsushita is silent on how the electrodes are connected to the chip 1. However, wire bond pads are a well-known structure used for creating circuitry and the use of such structure would have been obvious to one of ordinary skill in the art for the advantage of minimizing the circuitry and allowing easy attachment of electrical components to the circuitry. The LED's are adapted for emitting light and as a result will have a centroid over the LED. Further disclosed by Matsushita is an LED 2a and 2b at each respective end of the chips 1 which have an electrode 3a and 3b, respectively, that is biased inward toward the center of the chip. Thus resulting in a centroid

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emitted light from each end LED 2a and 2b that is positioned closer to an outer edge of the chip 1 (Matsushita, lines 9-11 of the English translated constitution). While Matsushita does not disclose the pitch of approximately  $21.2\text{ }\mu\text{m}$  the ideal pitch would have been obvious to one of ordinary skill in the art through routine experimentation or calculation.

Similarly, with respect to claim 10 the optimal dimensions between the chip edges and LED edges and between adjacent chips could have readily been determined by one of ordinary skill in the art through routine experimentation.

With respect to claim 11, Matsushita discloses that the arrow head shown in Figure 2b of Matsushita indicates the light center (centroid) of the LED 2a. This position is to the right of the center of the LED 2a.

9. Claims 8, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushita in view of Kahen et al. as applied to claims 7,, 9-10 above, and further in view of applicant's admittance of prior art.

With respect to claims 8 and 10, Matsushita in view of Kahen et al. discloses the claimed structure except for the gap between chips being  $5\text{ }\mu\text{m}$ . However, applicant's discloses on page 7, line 6-7, that the prior art shown in Figure 2 is known to have a gap of  $5\text{ }\mu\text{m}$  between chips 22a and 22b. Furthermore, it would have been obvious to one of ordinary skill in the art to determine the optimal spacing of the chips and LED's through ordinary routine experimentation.

With respect to claim 9, applicant also discloses that the chips shown in Figure 2 of applicant's disclosure have 1200 SPI (page 7, lines 3-4 of applicant's disclosure).

10. Claims 12, 14, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushita et al.

With respect to claim 12, Matsushita discloses the claimed high resolution LED array except for the specific pitch of approximately  $21.2\ \mu\text{m}$ . Matsushita discloses a plurality of LED chips 1 placed end to end with a gap between as shown in Figure 1 of Matsushita. Also disclosed are center electrodes 3 extending from each LED 2. The LED's are adapted for emitting light and as a result will have a centroid. Figure 1 of Matsushita shows that each chip 1 has a pair of LED's on respective ends of each chip 1 that has an electrode 3a and 3b respectively that is inward biased. While Matsushita does not disclose a pitch of  $21.2\ \mu\text{m}$ , it would have been obvious to one of ordinary skill in the art would to determine the ideal pitch through routine experimentation or calculation.

With respect to claims 14, the specific dimensions this claim would have been obvious to one of ordinary skill in the art through routine experimentation or calculation.

Similarly, the dimension recited in claims 18 and 20 would have been obvious to one of ordinary skill in the art through routine experimentation or calculation.

11. Claims 15-16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushita, as applied to claims 12 and 14 above, and further in view of applicant's admittance of prior art.

With respect to claim 15, Matsushita in view of Kahen et al. discloses the claimed structure except for the gap between chips being  $5\ \mu\text{m}$ . However, applicant's discloses on page 7, line 6-7, that the prior art shown in Figure 2 is known to have a gap of  $5\ \mu\text{m}$  between chips



22a and 22b. Furthermore, it would have been obvious to one of ordinary skill in the art to determine the optimal dimensions of the chips and LED's through ordinary routine experimentation.

With respect to claims 16 and 19, applicant also discloses that the chips shown in Figure 2 of applicant's disclosure have 1200 SPI (page 7, lines 3-4 of applicant's disclosure).

*Allowable Subject Matter*

12. Claims 1-6 are allowed.

13. The following is an examiner's statement of reasons for allowance:

Claims 1-6 have been allowed primarily for the step of removing an amount of chip material, substantially equal to a predetermined amount, from the chip.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hayase et al. is cited to show another example of a LED printbar with LED electrodes that are moved from the center of the LED.

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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan Colilla whose telephone number is (703) 308-2259. The examiner can normally be reached Tues.-Fri between 7:30 am and 6:00 pm. Faxes regarding this application can be sent to (703) 872 - 9306.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Hirshfeld can be reached at (703) 305-6619. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

January 9, 2004



Dan Colilla  
Primary Examiner  
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